

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 07-327223

(43)Date of publication of application : 12.12.1995

(51)Int.Cl.

H04N 7/18

H04N 5/225

(21)Application number : 06-120031

(71)Applicant : MITSUBISHI ELECTRIC CORP

(22)Date of filing : 01.06.1994

(72)Inventor : ABUKAWA MASAHIRO

TANAKA ATSUSHI

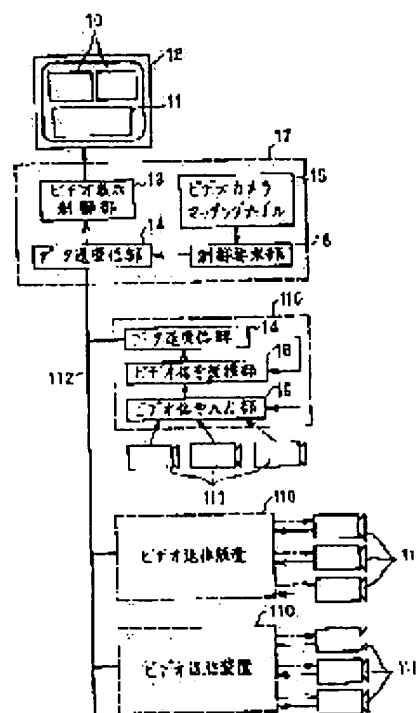
KAMEYAMA MASATOSHI

## (54) VIDEO MONITOR SYSTEM

### (57)Abstract:

**PURPOSE:** To reduce the cost of a system by using bus type or ring type communication line.

**CONSTITUTION:** In the video monitor system, the video data transmission request of a video camera designated by referring to a video camera mapping table 15 is generated by a control request part 16 and is transmitted to a designated video transmission equipment by a data transmission/reception part 14. The video transmission equipment receives this request and selectively inputs the signal of the designated video camera by a video signal input part 19 and digitizes video data by a video signal conversion part 18 and transmits only this video signal to a video reception equipment 17; and the video reception equipment 17 receives this data and performs the mask control for display position and the display form, the display of plural video monitor pictures 10, and the display of a control picture 11 by a video display control part 13.



\* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

## CLAIMS

---

[Claim(s)]

[Claim 1] A video supervising system constituted by connecting a video receiving set and a video sending set with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A video camera mapping table which has the information about said video cameras, such as a communication address of all the video sending sets to which a video camera is connected, and arrangement.

A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table.

A video presentation control section which displays a sent video data on a video presentation control monitor.

The 2nd data transmission and reception part in which a preparation and said video sending set transmit and receive bidirectional data.

A video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set.

A video signal converter which changes this input video signal into a digital video data.

[Claim 2] A video supervising system constituted by connecting a video receiving set, video transceiving equipment, and a video sending set to this order with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such

as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a video presentation control monitor, Equip said video transceiving equipment with a synthetic demand part required as compounding a desired video data, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, Have a video signal converter which changes this input video signal into a digital video data, and said video transceiving equipment, The 3rd data transmission and reception part that transmits and receives bidirectional data, and a video synthesis section which compounds a video data transmitted from said video sending set, and makes a video data a layered structure, A video composition selecting part which makes a selection judgment of the video data demanded in a synthetic demand part of said video receiving set among video datas transmitted from said video sending set.

[Claim 3]A video supervising system constituted by connecting a video receiving set and a video sending set with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A video camera mapping table which has the information about said video cameras, such as a communication address of all the video sending sets to which a video camera is connected, and arrangement.

A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table.

A video presentation control section which displays a sent video data on a video presentation control monitor.

A video expanding part which elongates said video data which received by said 1st data transmission and reception part.

The 2nd data transmission and reception part in which a preparation and said video sending set transmit and receive bidirectional data.

A video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, A video signal converter which changes this input video signal into a digital video data, and a video compression zone which has a video-data compression means which compresses data volume of this digital video data.

[Claim 4]A video supervising system constituted by connecting a video receiving set, video

transceiving equipment, and a video sending set to this order with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A video camera mapping table which has the information about a communication address and said video camera of all the video sending sets to which a video camera is connected, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a video presentation control monitor, A synthetic demand part required as compounding a desired video data of said video transceiving equipment, Have the 1st video expanding part that elongates said video data which received by said 1st data transmission and reception part, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, A video signal converter which changes this input video signal into a digital video data, Have the 1st video compression zone that has the 1st video-data compression means that compresses data volume of said video data, and said video transceiving equipment compounds the 3rd data transmission and reception part that transmits and receives bidirectional data, and a video data transmitted from said video sending set, A video composition selecting part which makes a selection judgment of the video data demanded in a synthetic demand part of said video receiving set among a video synthesis section which makes a video data a layered structure, and a video data transmitted from said video sending set, The 2nd video compression zone that has the 2nd video-data compression means that compresses data volume of a video data compounded by the 2nd video expanding part that elongates a video data which received by said 3rd data transmission and reception part, and said video synthesis section.

[Claim 5]The video supervising system according to any one of claims 1 to 4 with which the 2nd data transmission and reception part or 3rd data transmission and reception part equipped an inside with the amount checking means of data transmission which investigates transmitting load of a bus type or a ring type channel.

[Claim 6]A video receiving set is provided with compression ratio specification of a video data transmitted to an inside of a control request part to a specific video sending set or video transceiving equipment, or a maximum pressure shrinking percentage specification request means, The 1st video compression zone or the 2nd video compression zone, A compression ratio is determined as the compression ratio within the limits of the compression ratio to a compression ratio demand sent from said video receiving set with the amount load of data

transmission which is a result of determination or the amount checking means of data transmission about a compression ratio within the limits of setting out or its compression ratio, and said demanded compression ratio, The video supervising system according to any one of claims 3 to 5 which equipped a video-data compression means with a video compression ratio determination means to direct a compression ratio.

[Claim 7]The video supervising system comprising according to any one of claims 3 to 6:

The 1st video compression zone or the 2nd video compression zone, . Determine a frame rate or the amount load of data transmission which is a result of the amount checking means of data transmission determines said frame rate. Or a frame rate determination means by which a compression ratio determined by a video compression ratio determination means and the amount load of data transmission which is the results of the amount checking means of data transmission determine said frame rate.

Inter-frame handle stage which performs inter-frame length processing corresponding to said frame rate.

[Claim 8]A video supervising system constituted by connecting a video receiving set and a video sending set with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A video camera mapping table which has the information about said video cameras, such as a communication address of all the video sending sets to which a video camera is connected, and arrangement.

A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table.

A video presentation control section which displays a sent video data on a video presentation control monitor.

A video signal output unit control request part which performs a control request of a function of video signal output units, such as a video camera.

The 2nd data transmission and reception part in which a preparation and said video sending set transmit and receive bidirectional data.

A video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, a video signal converter which changes this input video signal into a digital video data, and a video camera control section which controls a function of a video camera.

[Claim 9]A video supervising system constituted by connecting a video receiving set and a video sending set with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A video camera mapping table which has the information about said video cameras, such as a communication address of all the video sending sets to which a video camera is connected, and arrangement.

A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table.

A video presentation control section which displays a sent video data on a video presentation control monitor.

A recording Request-to-Send part required as transmitting an already recorded video data.

The 2nd data receiving section in which a preparation and said video sending set transmit and receive bidirectional data.

A video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, A video signal converter which changes this input video signal into a digital video data, A recording directions part which has a recording directing means in which memory storage which records a video data, and monitor images in which a transmitted picture at the time of recording directions, memory site directions of said memory storage, and specific monitor-images transmission also included a video data carry out backup recording directions, A recording transmission instruction part it is directed that transmits an already recorded video data.

[Claim 10]The video supervising system according to any one of claims 1 to 9 provided with memory storage saved after receiving data which a video presentation control section of a video receiving set recorded a video data which received, or was recorded with a video sending set.

[Claim 11]A control request part of a video receiving set is provided with a picture-recording-times change-request means to require picture-recording-times change from a video sending set, and a recording directions part of a video sending set, The video supervising system according to claim 9 provided with a recording region change indicating means it is directed that secures a storage area of size for picture recording times to memory storage.

[Claim 12]A video sending set or a video receiving set secures one field in memory storage to one video camera, Have memory storage which has a spare recording region apart from it, and or a recording directions part of a video sending set, Record two or more video camera data, and recording regions other than one specific video datas of it are reduced to the permission minimum, The video supervising system according to claim 9 or 11 provided with specified recording region expansion / reduction directing means to which a recording region of said one specific video data is expanded to an allowable maximum storage capacity of said

memory storage.

[Claim 13]A video supervising system constituted by connecting a video receiving set and a video sending set with a bus type or a ring type channel, comprising:

The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data.

A video camera mapping table which has the information about said video cameras, such as a communication address of all the video sending sets to which a video camera is connected, and arrangement.

A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table.

A video presentation control section which displays a sent video data on a video presentation control monitor.

It is required that information about video cameras, such as arrangement etc. of a video camera connected to each video sending set, and video camera mapping information which comprises a communication address of the video sending set should be transmitted to said all the video sending sets, The 2nd data receiving section in which said video sending set transmits and receives bidirectional data and that is equipped with video camera mapping / initialization request part which requires initialization of all the devices except said video receiving set.

A video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set.

A video signal converter which changes this input video signal into a digital video data, and a video camera mapping information part holding said video camera mapping information.

---

[Translation done.]

\* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

## DETAILED DESCRIPTION

---

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention arranges two or more video cameras and video presentation control monitors in the position which has distance physically, respectively, They are connected with a bus type or a ring type channel, and it is related with the video supervising system which only one or more video cameras which operated by remote control and specified two or more video cameras from the video presentation control-monitor side make video transmit, and displays them on a video presentation control monitor.

[0002]

[Description of the Prior Art] Drawing 23 shows the system configuration of the conventional video supervising system shown, for example in Mitsubishi Electric and technical report Vol.65No.4 (1991).

In the figure, four sets of the video cameras 1111 are connected to the video selector 2303 by the video-data cable 2304, and the video monitor 2302 is further connected to said video selector 2303.

Said video camera 1111 is connected to the control station 2301 with the video control cable 2305, and the control screen 2300 is further connected to said control station 2301. VTR2200 and said control station 2301 are connected to said video selector 2303.

[0003] The arrangement space of the video selector 2303 and the video camera 1111 is dramatically long physically, and the video signal from said video camera 1111 is always transmitted to the video selector 2303 by the video-data cable 2304. The control station 2301 transmits the control data which chooses the video signal of the video camera 1111 to display on the video monitor 2302 to the video selector 2303, The video selector 2303 chooses the video signal which should be displayed from the video-data cable 2304 connected to it, and displays it on the video monitor 2302. This conventional video supervising system is connected



with the video camera 1111 and the video selector 2303 by the star type channel from the composition of the video-data cable 2304.

[0004]The video control cable 2305 by which video camera control data, such as a focus of the video camera 1111, zoom, bread, and bearing of the exposure axis, is individually connected to each video camera 1111 from the control station 2301 was chosen, and it transmitted, and is operating by remote control. This conventional video supervising system is connected with that video camera 1111 and control station 2301 by the star type channel from the composition of the video control cable 2305.

[0005]Although it is clear also from the video-data cable 2304 and the video control cable 2305 existing, video send data and the control data of the video camera are transmitted by the cable which became independent, respectively.

[0006]The control station 2301 is connected with the video-data cable 2304, and the video selector 2303 and the video control cable 2305 only the number of the video camera 1111, respectively. Since the video-data cable 2304 is used for analog video transmission, the cable has transmitted the video signal using a cable with the transmission capacity beyond the transmission capacity of the video camera 1111.

[0007]Since the video signal transmitted is an analog signal, the video monitor 2302 performs the video monitor screen display below the number of screens which the video monitor 2302 or the video selector 2303 has and which can be displayed.

[0008]The number of connection of the video camera 1111 can connect a camera only in the range depending on the number of input terminals of the video selector 2303.

[0009]The display of the video camera 1111 is displayed on the video monitor 2302, and the display of the video camera 1111, control state of the video selector 2303, etc. is displayed on the control screen 2300 again.

The separate monitor is used.

[0010]It is connected to the video selector 2303 and VTR2200 records only the video signal of the video camera 1111 by which display selection was made by the video selector on the VTR2200.

[0011]

[Problem(s) to be Solved by the Invention]Since the conventional video supervising system connects a video-data cable and a video control cable to one video camera, respectively and its distance between a video selector and a video camera is long, With extension of a video camera, the required length of each cable increased and there was a problem that the cost of a cable and laying work became high.

[0012]Even the video camera which all the video signals of the video camera connected to the video selector are always transmitted, and do not display continued transmitting a video image

signal, and the conventional video supervising system had a problem of waste of the electric power for useless data transmission and transmission.

[0013]The conventional video supervising system had the problem that all the cables had to be transferred, when positions, such as a control station and a video selector, were moved.

[0014]When the conventional video supervising system transmits the video data of a video camera, Since the analog video data with the high degree of promotion was transmitted to one set, using a video-data cable with the performance beyond 1 and the transmission capacity of a video camera, there was a problem that the send efficiency of data was bad.

[0015]Since the conventional video supervising system is treating both the signals of the output of an analog video data, and a digital-control entry of data to the video camera, It is attached to one set, one video-data cable and one cable [ two ] of a video control cable are used, and there was a problem that the long-distance telecommunication cable between a video selector and a video camera could not be transmitted and received as the same cable.

[0016]Since connection of a video camera depended for the conventional video supervising system on the number of input terminals of a video selector, when the video camera more than the number of input terminals was extended, the video selector was exchanged and there was a problem that all the video cameras had to be reconnected.

[0017]The conventional video supervising system had the problem that many monitor screen displays could not do the number of monitor screens displayed on a video monitor depending on the display performance of a video selector or a video monitor.

[0018]The video data and position of each video camera, control, etc. became complicated, and the conventional video supervising system had the problem that the complexity was proportional to the number of the video camera, when many video cameras came to have existed.

[0019]Since the control screens of the video monitor as which the conventional video supervising system displays monitor images, and a control state display differ, Since the field (the number of screens) which a hitcher on looks at increased further when control of a video camera cannot be performed and monitor images are displayed on two or more video monitors, while the hitcher on using a video supervising system cannot recognize at a glance or looks at a monitor screen, there was a problem of being hard to supervise.

[0020]The conventional video supervising system had to exchange the video selector by video camera extension, and had to change it into the control which also set the control station by it, and there was a problem that initialization took time and effort.

[0021]There was a problem that it took time to discover and display the picture which the video monitor images currently recorded specified since the conventional video supervising system was recording monitor images on VTR.

[0022]Since the conventional video supervising system was recording monitor images on VTR,

the picture recording times of monitor images will be fixed to the length of videotape, and it had a problem of the ability not to make it change.

[0023]The conventional video supervising system can record video monitor images on display, when monitor images are recorded on VTR and VTR is connected to the video selector, but. Even if the video monitor images which are not displayed cannot be recorded or direct continuation of the VTR is carried out to each video camera, When the number of the video camera existed more mostly than the number of VTR, the video monitor images by which direct continuation is not carried out to the video camera had the problem that it could not record.

[0024]Since the conventional video supervising system is recording the continuous monitoring picture on VTR, at a certain time. Must stop and recording to carry out the repeat display of the recording At that time. There was no means to record video monitor images, and when saying that a hitcher on wants to check especially during monitoring work just for a moment, there was a problem that it could not be said that it carries out at high speed, without stopping recording easily [ confirmation work / the ].

[0025]The cost reduction of a system in the video supervising system using [ were made in order that this invention might cancel the above problems, and ] the bus type or the linked type channel, Easy extension of each device or realization of deletion which constitutes systems, such as a video camera, Communication by the same channel of control data and a video data, video-data management simplification, Initialization automation of each device which constitutes the whole system or the system of store and forward processing of a video data, the efficient video communication in said channel, and a video supervising system, It aims at providing the video supervising system which makes it possible a specific monitor-images display and the surveillance backup recording realization at that time, efficient recording realization, and to recording un-stop at the time of a recording display.

[0026]

[Means for Solving the Problem]In a video supervising system which comprised a bus type or a ring type channel by connecting, a video supervising system of claim 1 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, a communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, Have a video presentation control section which displays a sent video data on a video presentation control monitor, and said video sending set, It has the 2nd data transmission and reception part that transmits and receives bidirectional data, a video signal input part which makes input selection of the video

signal of said video camera according to a Request to Send of said video receiving set, and a video signal converter which changes this input video signal into a digital video data.

[0027]In a video supervising system constituted by a video supervising system of claim 2 connecting a video receiving set, video transceiving equipment, and a video sending set to this order with a bus type or a ring type channel, The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data, A communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a video presentation control monitor, Equip said video transceiving equipment with a synthetic demand part required as compounding a desired video data, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, The 3rd data transmission and reception part in which said video transceiving equipment transmits and receives bidirectional data and that is equipped with a video signal converter which changes this input video signal into a digital video data, A video synthesis section which compounds a video data transmitted from said video sending set, and makes a video data a layered structure, It has a video composition selecting part which makes a selection judgment of the video data demanded in a synthetic demand part of said video receiving set among video datas transmitted from said video sending set.

[0028]In a video supervising system which comprised a bus type or a ring type channel by connecting, a video supervising system of claim 3 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, a communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a video presentation control monitor, Have a video expanding part which elongates said video data which received by said 1st data transmission and reception part, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, It has a video signal converter which changes this input video signal into a digital video data, and

a video compression zone which has a video-data compression means which compresses data volume of this digital video data.

[0029]In a video supervising system constituted by a video supervising system of claim 4 connecting a video receiving set, video transceiving equipment, and a video sending set to this order with a bus type or a ring type channel, The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data, A communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a video presentation control monitor, A synthetic demand part required as compounding a desired video data of said video transceiving equipment, Have the 1st video expanding part that elongates said video data which received by said 1st data transmission and reception part, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, and a video signal converter which changes this input video signal into a digital video data, Have the 1st video compression zone that has the 1st video-data compression means that compresses data volume of said video data, and said video transceiving equipment, The 3rd data transmission and reception part that transmits and receives bidirectional data, and a video synthesis section which compounds a video data transmitted from said video sending set, and makes a video data a layered structure, A video composition selecting part which makes a selection judgment of the video data demanded in a synthetic demand part of said video receiving set, It has the 2nd video compression zone that has the 2nd video-data compression means that compresses data volume of a video data compounded by the 2nd video expanding part that elongates a video data which received by said 3rd data transmission and reception part, and said video synthesis section.

[0030]A video supervising system of claim 5 is provided with the amount checking means of data transmission to which the 2nd data transmission and reception part or 3rd data transmission and reception part investigates transmitting load of a bus type or a ring type channel inside in the video supervising system according to any one of claims 1 to 4.

[0031]In the video supervising system according to any one of claims 3 to 5, a video supervising system of claim 6 a video receiving set, It has compression ratio specification of a video data transmitted to an inside of a control request part to a specific video sending set or video transceiving equipment, or a maximum pressure shrinking percentage specification request means, The 1st video compression zone or the 2nd video compression zone, A

compression ratio is determined as the compression ratio within the limits of the compression ratio to a compression ratio demand sent from said video receiving set with the amount load of data transmission which is a result of determination or the amount checking means of data transmission about a compression ratio within the limits of setting out or its compression ratio, and said demanded compression ratio, A video-data compression means is equipped with a video compression ratio determination means to direct a compression ratio.

[0032]In the video supervising system according to any one of claims 3 to 6, a video supervising system of claim 7 the 1st video compression zone or the 2nd video compression zone, . Determine a frame rate or the amount load of data transmission which is a result of the amount checking means of data transmission determines said frame rate. Or it has a frame rate determination means by which a compression ratio determined by a video compression ratio determination means and the amount load of data transmission which is the results of the amount checking means of data transmission determine said frame rate, and an inter-frame handle stage which performs inter-frame length processing corresponding to said frame rate.

[0033]In a video supervising system which comprised a bus type or a ring type channel by connecting, a video supervising system of claim 8 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, a communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a video presentation control monitor, Have a video signal output unit control request part which performs a control request of a function of video signal output units, such as a video camera, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, It has a video signal converter which changes this input video signal into a digital video data, and a video camera control section which controls a function of a video camera.

[0034]In a video supervising system which comprised a bus type or a ring type channel by connecting, a video supervising system of claim 9 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, and a video camera mapping table which has the information about a communication address and said video camera of all the video sending sets to which a video camera is connected, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent video data on a

video presentation control monitor, Have a recording Request-to-Send part required as transmitting an already recorded video data, and said video sending set, The 2nd data receiving section that transmits and receives bidirectional data, and a video signal input part which makes input selection of the video signal of said video camera according to a Request to Send of said video receiving set, A video signal converter which changes this input video signal into a digital video data, memory storage which records a video data, and a video data Recording directions and memory site directions of said memory storage, It has a recording directions part which has a recording directing means in which monitor images also including a transmitted picture at the time of specific monitor-images transmission carry out backup recording directions, and a recording transmission instruction part it is directed that transmit an already recorded video data.

[0035]A video supervising system of claim 10 is provided with memory storage saved after receiving data which a video presentation control section of a video receiving set recorded a video data which received, or was recorded with a video sending set in the video supervising system according to any one of claims 1 to 9.

[0036]In the video supervising system according to claim 9, a video supervising system of claim 11 a control request part of a video receiving set, It has a picture-recording-times change-request means to require picture-recording-times change from a video sending set, and a recording directions part of a video sending set is provided with a recording region change indicating means it is directed that secures a storage area of size for picture recording times to memory storage.

[0037]In the video supervising system according to claim 9 or 11, a video supervising system of claim 12 a video sending set or a video receiving set, Have memory storage which secures one field in memory storage to one video camera, and has a spare recording region apart from it, and or a recording directions part of a video sending set, Two or more video camera data is recorded, recording regions other than one specific video datas of it are reduced to the permission minimum, and it has specified recording region expansion / reduction directing means to which a recording region of said one specific video data is expanded to an allowable maximum storage capacity of said memory storage.

[0038]In a video supervising system which comprised a bus type or a ring type channel by connecting, a video supervising system of claim 13 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, a communication address of all the video sending sets to which a video camera is connected, and a video camera mapping table which has the information about said video cameras, such as arrangement, A control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, A video presentation control section which displays a sent

video data on a video presentation control monitor, It is required that information about video cameras, such as arrangement etc. of a video camera connected to each video sending set, and video camera mapping information which comprises a communication address of the video sending set should be transmitted to said all the video sending sets, Have video camera mapping / initialization request part which requires initialization of all the devices except said video receiving set, and said video sending set according to the 2nd data transmission and reception part that transmits and receives bidirectional data, and a Request to Send of said video receiving set, It has with a video signal input part which makes input selection of the video signal of said video camera, a video signal converter which changes this input video signal into a digital video data, and a video camera mapping information part holding said video camera mapping information.

[0039]

[Function]The video supervising system of claim 1 is using a bus type or a ring type channel, By having a means to be able to perform easy extension with cost reductions, such as a telecommunication cable of the system of a video supervising system, and laying work, and to choose a required video signal input, what is necessary is to transmit only a required video data, traffic and communication cost can be reduced, and efficient communication is possible.

[0040]The video supervising system of claim 2 is giving a video-data synchronizer to video transceiving equipment, and since-izing can be carried out [ layered structure ] by reducing the video reception times of a video receiving set, and compounding a video data, when displaying much videos, a video data's own management becomes easy.

[0041]The video supervising system of claim 3 is having a video compression zone and a video expanding part, and time to reduce the communication load of a bus type or a ring type channel, and transmit a video data to a video receiving set from a video sending set is shortened.

[0042]The video supervising system of claim 4 is having a video compression zone and a video expanding part, even when carrying out the composite display of two or more video images, The time which the communication load of a bus type or a ring type channel is reduced, and video-data communication takes between a video sending set, between video transceiving equipment and video transceiving equipment, and a video receiving set is shortened.

[0043]By having a means to investigate the amount of data transmission of a channel, the video supervising system of claim 5 can set a compression ratio and a frame rate as a suitable value, and the efficient communication of it is attained.

[0044]The video supervising system of claim 6 is having a means changing the compression ratio of a video data dynamically, and is made into the amount of video datas which is in tolerance level, and could specify the clearness for every video frame of the video monitor



images transmitted, and was suitable for the amount load of data transmission of the bus type or the ring type channel.

[0045]The video supervising system of claim 7 is performing inter-frame length processing, when carrying out video-data compression with the specified compression ratio, it can perform data reduction beyond it further, and the efficient communication of it is attained.

[0046]The video supervising system of claim 8 by having a video signal converter, a video signal output unit control request part, and a video camera control section, Transmission and reception become possible by the same cable, and the cost reduction of a telecommunication cable and cost reductions, such as laying work, can do control data and video datas, such as a video sending set, video transceiving equipment, a video receiving set, and a video camera.

[0047]The video supervising system of claim 9 is having formed the video recording means in the video sending set, Since the means which records, without applying load to a channel, and carries out the Request to Send of the recorded data to a video receiving set was formed, Without becoming the hindrance of preferential transmission of the specific monitor-images communication in an emergency etc., being able to display the recording of a desired video camera, when free, and recording with a video sending set can record other monitor images, and it can back them up as surveillance business.

[0048]The video supervising system of claim 10 is having formed the video recording means in the video receiving set, and it reduces the load of a channel, without being able to perform fine operation of recording displays, such as playback, top delivery, rewinding, and a rapid traverse, at high speed, and making it resend, once it receives recorded data.

[0049]The video supervising system of claim 11 can lengthen the picture recording times of a surveillance camera important in an instant by the ability of the storage capacity of the recording region of each camera to be changed dynamically, and what has low importance is made short and efficient use of memory storage is possible for it.

[0050]Since the video supervising system of claim 12 has one recording region to one camera, Two or more cameras can record simultaneously and recording region expansion of the specific camera in an emergency and reduction of other recording regions are possible by a specified recording region expansion function, Or in addition to the recording region of each camera, by having a spare recording region in the memory storage of each video sending set, at a certain time, when carrying out the repeat display of the recording of a certain video camera, it can display without suspending the recording mostly, and little confirmation work etc. can be performed easily.

[0051]The video supervising system of claim 13 by having a collecting means of initialization automation and video camera mapping information, Even if initialization of the whole video supervising system accompanying extension of a video camera, a video sending set, and video transceiving equipment is easy and two or more video receiving sets are connected with

the bus type or the ring type channel into this system, It can have the same video camera mapping table with each of that video receiving set, and either can also perform automatic initialization of all the systems, and can keep the consistency of the whole system easy.

[0052]

[Example]

Example 1. drawing 1 is a figure showing the composition of the video supervising system of Example 1 of this invention. As for the basic constitution of this figure, the video receiving set 17 is connected with the video presentation control monitor 12, It is the composition that two or more video cameras 111 and video sending sets 110 are connected, and the video receiving set 17 and two or more video sending sets 110 are further connected with the bus type or the ring type channel 112. The video receiving set 17 comprises the video presentation control section 13, the data transmission and reception part 14, the video camera mapping table 15, and the control request part 16. The control request part 16 has the video Request-to-Send means 100 shown in drawing 10. The video sending set 110 comprises the data transmission and reception part 14, the video signal converter 18, and the video signal input part 19. One or more video monitor screens 10 and video control screens 11 are simultaneously displayed on the video presentation control monitor 12. It is the table stored in the form where the input port number of the camera connected to the communication address and sending set of all the video sending sets and the arrangement information of the camera corresponded to the video camera mapping table 15 for every camera.

[0053]In the video supervising system of this example, the signal of only the specified video camera 111 is sent to the video receiving set 17, and drawing 12 shows the operation flow as which the monitor images of a video camera are displayed on the video presentation control monitor 12. If the hitcher on using this system advances the demand which displays the monitor images of one video camera on the video presentation control monitor 12 with the video control screen 11 (Step 1200), The communication address of the video sending set 110 which looks for which camera registered into the video camera mapping table 15 it is (Step 1201) and to which the camera is connected by the video Request-to-Send means 100 of the control request part 16, The input video port number of the camera is taken out (Step 1202). Using those information, in the video Request-to-Send means 100, a specification video camera picture Request to Send is generated (Step 1203), and is transmitted to the taken-out video sending set of a communication address (Step 1204). Next, in the video sending set 110 applicable to the demand. After receiving the demand (Step 1205) and decomposing and decoding the information, in order to incorporate the signal of the specified video camera into a video sending set, a selection input is carried out from the input video port number of the demand in the video signal input part 19 (Step 1206). And a video signal is digitized by the video signal converter 18 for the inputted signal (Step 1207), and it transmits to the video

receiving set 17 which carried out the Request to Send of it (Step 1208). until operation of these steps 1206-1208 ends the monitor-images display of the specified video camera -- a video signal input, conversion, and transmission -- loop processing -- or pipeline processing is carried out. This video signal input part 19 is multiple entries allowed ability by changing a signal input at high speed, when it has two or more video signals specified. Next, in the video receiving set 17, the data of the monitor images of this specified video camera is received (Step 1209), The frame memory writing for the control for displaying on the video presentation control monitors 12, such as mask processing for the position which displays video by the video presentation control section 13, and display shape, and a display is performed (Step 1210), and it displays on the video presentation control monitor (Step 1211).

[0054]Therefore, the hitcher on [ operation / of this video camera mapping table 15 and said explanation ] using the video supervising system of this invention, He can be conscious of it, only arrangement of a video camera can be specified, only the data of the specified video camera is transmitted to the video receiving set 17, and a specification video surveillance camera can be displayed on a video presentation control monitor.

[0055]Example 2. drawing 2 is a figure showing the composition of the video supervising system of Example 2 of this invention. The basic constitution of this figure is a bus type of the video presentation control monitor 12, the video receiving set 17, two or more video cameras 111, two or more video sending sets 110, and 23 or 2 video transceiving equipment, or the ring type channel 112. Two bus types or the ring type channel 112 is connected to the video transceiving equipment 23, the video receiving set 17 is connected to the channel 112 of one of these, and two or more video sending sets 110 are connected to the channel 112 of another side. The video receiving set 17 comprises the video presentation control section 13, the data transmission and reception part 14, the video camera mapping table 15, the control request part 16, and the synthetic demand part 20. The control request part 16 has the video Request-to-Send means 100. The video sending set 110 comprises the data transmission and reception part 14, the video signal converter 18, and the video signal input part 19. The video transceiving equipment 23 comprises the data transmission and reception part 14, the video composition selecting part 21, and the video synthesis section 22 which are connected to said two bus types or the ring type channel 112. One or more video monitor screens 10 and video control screens 11 are simultaneously displayed on the video presentation control monitor 12. The input port number of the camera connected to the video camera mapping table 15 at the communication address and sending set of all the video sending sets, and the arrangement information of a camera, The communication address of the video transceiving equipment to which the video sending set is connected is the table stored in the form where it corresponded for every camera.

[0056]In the video supervising system of this example 2, the operation flow of a specification

video monitor-images display is the same as drawing 12 of Example 1. Drawing 13 sends the data of two or more specified video cameras 111 to the video transceiving equipment 23 in the video supervising system of this example 2, It compounds with the video transceiving equipment 23, and sends to the video receiving set 17, and the operation flow of a monitor-images display of the synthetic video camera which is treated on a par with the display as the video monitor screen 10 of other video camera pictures, and is displayed on the video presentation control monitor 12 is shown. If the hitcher on using this system advances the demand which displays the synthetic monitor images of two or more video cameras on the video presentation control monitor 12 with the video control screen 11 (Step 1300), Processing to Steps 1200-1208 of drawing 12 of said Example 1 and the same processing are made to perform in the video sending set 110 for transmission of the video camera for carrying out a composite display (Step 1301). Next, the video camera mapping table 15 is referred to in the synthetic demand part 20, Two or more specified monitor images are connected to which video sending set 110 of which camera, If the device is connected with which video transceiving equipment 23, it investigates whether it is transmitted to the video sending set 17 via it (Step 1302) and two or more of the monitor images do not go via the same video transceiving equipment, Monitor images are independently transmitted to a video receiving set, respectively, it is made to carry out next-to-each-other \*\*\*\*\* of each video by the video presentation control section 13, without carrying out a composite display, and the control is controlled like Steps 1209-1211 of drawing 12 (Step 1303). If it goes via the same video transceiving equipment 23, a synthetic demand will be generated (Step 1304) and it will transmit to the video transceiving equipment 23 (Step 1305). Next, in the video transceiving equipment 23, receive the demand of said video receiving set 17 by the data transmission and reception part 14 (Step 1306), and on a basis the demand by the video composition selecting part 21. The synthetic element which generates the information which judges which is compounded among two or more video datas which received with the video transceiving equipment 23 (Step 1307), carries out setting-out maintenance and expresses arrangement of each picture, etc. to the video synthesis section 22 based on said demand is set up (Step 1308). Next, the video transceiving equipment 23 receives two or more video datas by said data receiving section 14 (Step 1309), and compounds after choosing the video data which should be compounded by the video composition selecting part 21 (Step 1310) (Step 1311). And the synthetic video data is regarded like one usual video data, and it transmits to the video receiving set 17 (Step 1312). There is no synthetic stop instruction at this video transceiving equipment 23, and each processing of these steps 1309-1312 performs loop processing or pipeline processing in video-data reception. Next, in the video receiving set 17, receive said synthetic video data by the data transmission and reception part 14 (Step 1313), treat the data as one monitor images, and it by the video presentation control section 13. Display-processing

control of the mask processing of a display position and display shape, etc. is performed, the frame memory writing for displaying on the video presentation control monitor 12 is performed (Step 1314), and a synthetic monitor video picture is displayed by the video monitor screen 10 on said monitor (Step 1315).

[0057]Therefore, by the video transceiving equipment 23 and its internal configuration, with the video receiving set 17, management by a layered structure can do a video data or a video camera by the display of many video datas becoming easy, and compounding a video data, and the management becomes easy.

[0058]Example 3. drawing 3 is a figure showing the composition of the video supervising system of Example 3 of this invention. The basic constitution of this figure is the same as that of Example 1. The point of difference, the video compression zone 31 is added to the video expanding part 30 and the video sending set 110 by the video receiving set 17.

[0059]Although the operation flow of a specification video monitor-images display of this example 3 is the same as that of drawing 12 almost, Among Steps 1207 and 1208, the compressed video data which carried out the data compression of the digital video data by the video-data compression means 92 of the video compression zone 31, and was received among Steps 1209 and 1210 is elongated by the video expanding part 30, and the video presentation control section 13 is passed.

[0060]Therefore, time to reduce the communication load of a bus type or the ring type channel 112, and transmit a video data to the video receiving set 17 from the video sending set 110 by having this video compression zone 31 and the video expanding part 30, is shortened.

[0061]Example 4. drawing 4 is a figure showing the composition of the video supervising system of Example 4 of this invention. The basic constitution of this figure is the same as that of Example 2 almost. A point of difference is a point that the video compression zone 31 was added to the video expanding part 30 and the video sending set 110, and the video expanding part 30 and the video compression zone 31 were added to the video receiving set 17 by the video transmission and reception section 23.

[0062]In the video supervising system of Example 4, the operation flow of a specification video monitor-images display is completely the same as that of Example 3. Although the operation flow of two or more monitor-images composite display is the same as that of drawing 13 almost, Although operation of drawing 12 is passed from there at Step 1301, Like Example 3, among Steps 1207 and 1208, the compressed video data which carried out the data compression of the digital video data by the video-data compression means of the video compression zone 31, and was received among Steps 1209 and 1210 is elongated by the video expanding part 30, and the video presentation control section 13 is passed. By drawing 13, among Steps 1310 and 1311, once it elongates the video data which should be compounded, processing moves to Step 1311, and by the video expanding part 30 among

Steps 1311 and 1312, The compound video data is compressed by the video-data compression means 92 of the video compression zone 31, and processing moves to Step 1312.

[0063]By therefore, the thing for which it has the video compression zone 31 and the video expanding part 30 even when carrying out the composite display of two or more video images. The time which the communication load of a bus type or the ring type channel 112 is reduced, and video-data communication takes between the video sending set 110, between the video transceiving equipment 23 and the video transceiving equipment 23, and the video receiving set 17 is shortened.

[0064]Example 5. drawing 5 is a figure showing the composition of the video supervising system of Example 5 of this invention. The basic constitution of this figure is the same as that of Example 1 almost. A point of difference is a point that the video signal output unit control request part 50 was added to the video receiving set 17, and the video camera control section 51 was added to the video sending set 110.

[0065]The operation flow of a specification video monitor-images display of Example 5 is completely the same as that of drawing 12. Drawing 14 is remote video camera flows of control, such as specified bearing of the exposure axis of a video camera, luminosity, zoom, and bread. First, when the hitcher on using this system advances the control request of one video camera (Step 1400), with the video control screen 11 like Example 1, The camera which corresponds from the video camera registered into the video camera mapping table 15 by the video signal output unit control request part 50 is looked for (Step 1201), The communication address and the input port number of a camera of the video sending set 110 to which the camera is connected are taken out (Step 1202). The control request of those information and video cameras generates the specification video camera control request which shows the control content of the specified video camera in the video signal output unit control request part 50 (Step 1401). The demand is transmitted to said video sending set 110 of a communication address looked for using the same bus type as the channel which transmits a video data, or the ring type channel 112 (Step 1402). Next, said demand is received in the video sending set 110 (Step 1403), It changes into the control signal which looks for which camera it is from the demand (Step 1404), and can recognize a video camera from the video camera control content of said demand (Step 1405), and it transmits to a video camera and controls (Step 1406).

[0066]In this Example 5, it is applicable also to the system configuration of Example 2 which arranges the video transceiving equipment 23 between the video receiving set 17 and the video sending set 110, and the video signal output unit control request part 50 is added to that video receiving set 17, and the video camera control section 51 is added to the video sending set 110.

[0067]Therefore, it can transmit and receive with the same channel, and in the system of Example 5, since the video-data and video camera control signal also uses the digital data, the construction in video camera installation and cable cost can be lowered.

[0068]Example 6. drawing 6 is a figure showing the composition of the video supervising system of Example 6 of this invention. The basic constitution of this figure is the same as that of Example 1, and a point of difference is that the video receiving set 17 has the recording Request-to-Send part 60, and there are the recording directions part 61, the memory storage 62, and the recording transmission instruction part 63 which have a recording directing means in the video sending set 110.

[0069]Drawing 15 shows the operation flow of the recording in the video supervising system of this example 6. This figure is similar to drawing 12. A point of difference is a flow between Steps 1205 and 1206 and between Steps 1207 and 1208. the feature in this example 6 is assigning the storage capacity for picture recording times to the memory storage 62 as a recording region for every one video camera, and it being alike other than this and assigning the recording region for one camera as a reserve recording region. In this example 6, each of that recording region is a ring buffer, and picture recording times have a fixed value in the initial stage. If the Request to Send of the video camera picture specified when the flow between Steps 1205 and 1206 was explained is received (Step 1205), It moves to the following flow, without investigating whether a reserve ring buffer exists in the memory storage 62 (Step 1500), performing area allocation of a reserve ring buffer in the memory storage 62, if it does not exist (Step 1501), otherwise, doing anything. Next, if it investigates whether the recording ring buffer of a specification video camera exists in the memory storage 62 (Step 1503) and does not exist from said demand, Area allocation of the recording ring buffer is performed in the memory storage 62 (Step 1504), otherwise, it moves to the following flow. And it moves to the flow of Step 1206. Next, although it is between Steps 1207 and 1208, The video data digitized by video signal conversion is recorded on said assigned recording ring buffer to the specification video camera (Step 1505), and it shifts from it to transmission (Step 1208) of said digital video data of the following flow. Operation of Steps 1206-1207, 1504, and 1208 does not have a video presentation deactivate request at this time, and when it is during a video signal input, loop processing or pipeline processing is performed.

[0070]Next, in the video supervising system of this example 6, drawing 16 makes the recorded data of the specified video camera 111 send to the video receiving set 17 from the video sending set 110, and shows the operation flow which displays recorded data on the video presentation control monitor 12. At this time, recording of monitor images is continued during recorded data transmission with the video sending set 110, and recording is extremely continued by short-time halt. When the hitcher on using this system advances the demand which displays the recorded data of one video camera on the video presentation control

monitor 12 with the video control screen 11 (Step 1600), by the recording Request-to-Send part 60. A camera applicable among the video cameras registered into the video camera mapping table 15 is looked for, and the communication address and the input port number of a camera of the video sending set 110 to which the camera is connected are taken out (Step 1601). Using these information, in the recording Request-to-Send part 60, the recorded data Request to Send of a specification video camera is generated (Step 1602), and is transmitted to the taken-out video sending set of a communication address (Step 1603). Next, in the video sending set 110 to which said demand corresponded. After receiving said demand (Step 1604) and decomposing and decoding the information, in the recording transmission instruction part 63. The recording ring buffer corresponding to the specified video camera in the memory storage 62 is looked for (Step 1605), The writing of the ring buffer is stopped (Step 1606), the reserve ring buffer currently beforehand held to the memory storage 62 is exchanged for said ring buffer (Step 1607), and the recording of said video camera is restarted (Step 1608). And a new reserve ring buffer is assigned in memory storage instead of the used reserve ring buffer (Step 1609). Next, even the newest thing is transmitted to the video receiving set 17 by making the time oldest picture of said exchanged recording ring buffer into a head (Step 1610). Next, the sent recorded data is received in the video receiving set 17 (Step 1611), It is once memorized to the memory storage in the video presentation control section 13 (Step 1612), mask processing for a display position and display shape, etc. are performed by the video presentation control section 13, and recorded data is displayed on the video presentation control monitor 12.

[0071]Therefore, recording of the specified video camera can be extremely continued now by short-time recording halt by these steps 1605-1608 and a reserve ring buffer. By providing the recording means of each video camera in a video sending set, the load of the video receiving set 17 and the memory amount of consumption of the memory storage 62 which carry out display control of many video cameras can be made to be able to reduce, and load and its memory amount of consumption can be distributed. Thereby, much videos can be easily recorded now. By forming the memory storage 62 also in the video receiving set 17 side, once it receives recorded data, It becomes unnecessary to make it resend to a video sending set, and a prompt action can be performed in recording display control, such as playback, reverse reproduction, and top delivery, and the communication load of a bus type or the ring type channel 112 can be reduced. Since it records simultaneously with the transmission at the time of Request-to-Send reception of the monitor images specified with the video sending set 110, the backup as monitoring work is possible, it is lost about recording that data appears in a channel, and it becomes channel unloading. Like Example 2, the composition by which the video transceiving equipment 23 was inserted between the video receiving set 17 and the video sending set 110 can also use this example 6.



[0072]Example 7. drawing 7 is a figure showing the composition of the video supervising system of Example 7 of this invention. The basic constitution of this figure was the same as that of Example 1, and added the video camera mapping table / initialization request part 70 to the video receiving set 17, and it added the video camera mapping information 71 to the video sending set 110 at the point of difference. Here, the video camera mapping information part 71 has held the communication address of the information about video cameras, such as arrangement information of a video camera, and an input video port number, and a video sending set beforehand.

[0073]The operation flow of the specification video monitor-images display which can be put on the video supervising system of this example 7 is the same as drawing 12 of Example 1.

[0074]Drawing 17 shows the video camera mapping table generation / system initialization flow in the video supervising system of this example 7. First, the hitcher on [ control screen / 11 / video ] using this system, If the initialization request of this system is advanced (Step 1700), the initialization request of each part of a system and the demand which transmits the information to all the video sending sets 110 with video camera mapping information will be generated in video camera mapping / initialization request part 70 (Step 1701), It is transmitted to all the devices connected with a bus type or a ring type channel (Step 1702). And each video sending set 110 transmits the information which receives the demand (Step 1703), and initializes each part of the device (Step 1704), and is held in the video camera mapping information part 71 to the video receiving set 110 (Step 1705). And the video receiving set 17 receives video camera mapping information from each video sending set 110 (Step 1706), collects those information, and generates it as a video camera mapping table (Step 1707), and system initialization ends it (Step 1708). The system configuration of an operation flow by which this inserted the video transceiving equipment 23 between the video receiving set 17 and the video sending set 110 like Example 2 is also the same. However, at this time, the video transceiving equipment 23 also receives a demand and initialization of each part is performed.

[0075]Therefore, the whole system can be initialized by a remote by video camera mapping / system initialization demand of this video receiving set 17. Except [ all ] initialization setting out of the video sending set 110 which connects the video camera to extend, it automates and the troublesome initializing work generated by extension of a system becomes easy.

[0076]The example 8. example 8 to the data transmission part 14 of the video sending set 110 of Example 3 drawing 8, Drawing 9 is used for the video compression zone 31, the thing except the picture-recording-times change-request means 102 of drawing 10 is applied to the control request part 20 of the video receiving set 17, and it has the composition that the amount checking means 81 of data transmission of the data transmission and reception part 14 and the video compression ratio determination means 90 of the video compression zone 31

were connected.

[0077]The operation flow of a specification video surveillance display of the video supervising system of this example 8 is fundamentally similar with drawing 12 of Example 1. However, the video compression flow explained below between the steps 1207 and 1208 and Steps 1209 and 1210 is added. Drawing 18 shows said video compression flow of the video supervising system of this example 8. This flow is inserted among Steps 1207 and 1208 of drawing 12, and video elongation processing is inserted among Steps 1209 and 1210 like Example 3. It explains after Step 1207. In the video sending set 110, the inside of the data-transmission-and-reception means 80 has a transmission buffer after video signal conversion (Step 1207), and by the amount checking means 102 of data transmission of the data transmission and reception part 14. The data volume accumulated without being transmitted to that buffer is checked (Step 1800), if this quantity is large, by the video compression ratio determination means 90 of the video compression zone 31, in order to decrease the amount of video datas, a data compression will be carried out, and the video compression ratio for it will be determined (Step 1801). If the amount of data transmission is not large, a video data as it is is transmitted (Step 1208). When the amount of data transmission is large, it is investigated after said compression ratio determination whether the determined compression ratio is larger than the allowable pressure shrinking percentage registered into the video compression ratio determination means 90 (Step 1802). And if large, said determined compression ratio will be made into the allowable pressure shrinking percentage (Step 1803), instead the frame rate of video will be decreased (Step 1804). And inter-frame length processing of a video data is performed (Step 1805). If said determination compression ratio is within the limits of allowable pressure shrinking percentage, it will shift to compression processing (Step 1806) of a video data, without doing anything. Next, with said determined compression ratio, a video data is compressed (Step 1806) and it transmits (Step 1208). Among Steps 1209 and 1210, video extension is performed and it displays on the video presentation control monitor 12.

[0078]Next, setting out of said allowable pressure shrinking percentage is shown. When the hitcher on using this system does change specification, with the video control screen 11, the maximum-permissible video compression ratio at the time of video transmission of a specification video camera by the compression ratio request means 101 of the control request part 16. The input port number of a video camera and the communication address of a video sending set applicable from the video camera mapping table 15 are taken out, and a compression ratio demand is generated from the specification permission video compression ratio which said hitcher on demanded, and said taken-out data. And it transmits to the video sending set 110 which specified it by the data transmission and reception part 14. In the video sending set 110, reception of said demand will set up and hold allowable pressure shrinking percentage for the video compression ratio determination means 90 of the video compression

zone 31. Thereby, allowable pressure shrinking percentage setting out is completed.

[0079]Although the compression ratio and frame rate of a video data are determined from the transmitting load and allowable pressure shrinking percentage of a bus type or a ring type channel and the amount of communication video datas is reduced by this, the suitable and efficient communication which took into consideration the image quality deterioration by video-data compression, etc. by this is possible. When transmitting load is small, it becomes without compressing superfluously.

[0080]This is a system configuration like Example 4 instead of Example 3, and even if it adds the data transmission and reception part 14 of drawing 8, and the video compression zone 31 of drawing 9 to the video sending set 110 and the video transceiving equipment 23, it can apply the same operation flow.

[0081]The example 9. example 9 has structure which applied drawing 11 to the recording directions part 61 of the video sending set 110 of Example 6, and applied the picture-recording-times change-request means 102 of drawing 10 to the control request part 20 of the video receiving set 17.

[0082]In the video supervising system of this example 9, the operation flow of a specification video monitor-images display and recording is the same as drawing 15 of Example 6, and the operation flow of recording transmission is the same as drawing 16.

[0083]Drawing 19 shows the flow which changes the picture recording times of the specified video camera 111 in the video supervising system of Example 9. First, the hitcher on [ control screen / 11 / video ] using this system, When a demand is advanced [ changing the picture recording times of one video camera, and ] (Step 1900), in the picture-recording-times change-request means 102 of the control request part 16. With reference to the video camera mapping table 15, from the communication address of the video sending set 110 and video camera input port number corresponding to the specified video camera, and the picture recording times of said demand, a picture-recording-times change request is generated and it transmits to a video sending set (Step 1901). Next, in the video sending set 110, said demand is received and it changes into the size of the recording ring buffer which is equivalent to picture recording times from said demand by the recording region alteration means (Step 1101) of the recording directions part 61 (Step 1902). And the recording ring buffer which is a recording region of an applicable video camera is taken out (Step 1903), and the size of the ring buffer is changed (Step 1904). And picture-recording-times change is completed (Step 1905).

[0084]Drawing 20 is a specified recording region expansion flow for expanding the recording region of a video camera specified as backup recording, such as an emergency in the video supervising system of this example 9, as much as possible, and recording it. First, the hitcher on [ control screen / 11 / video ] using this system, When it requires that recording region expansion should be carried out of a certain specific video camera (Step 2000), in the picture-

recording-times change-request means 102 of the control request part 20. With reference to the video camera mapping table 15, from the communication address of the video sending set 110 and video camera input port number corresponding to the specified video camera, and said demand, a specified recording region expansion demand is generated and it transmits to the video sending set 110 (Step 2001). In the video sending set 110, receive and said demand by specified recording region expansion / reduction directing means 1102 of the recording directions part 61. It points to the recording region alteration means 102 so that the buffer size of recording ring buffers other than the specified video camera may be reduced into tolerance level, then, it reduces (Step 2002) -- the buffer size of the recording ring buffer of a specification video camera is conversely expanded to the maximum (Step 2003).

[0085]Like Example 6, the Example 9 operates in a similar manner, even if the video transceiving equipment 23 exists between the video receiving set 17 and the video sending set 110.

[0086]By the above, the hitcher on can change picture recording times to the video receiving set 17 freely. Prolonged recording is preponderantly attained as a backup recording function as a supervising system in an emergency in the monitor images which should be observed, and video monitor images can be displayed on the video presentation control monitor 12 simultaneously with it.

[0087]Example 10. drawing 21 is a figure showing the composition of the video supervising system of Example 10 of this invention. This example 10 integrates all the functions for Examples 1-9 as one video supervising system, and each operation of it is the same as that of Examples 1-9.

[0088]Example 11. drawing 22 shows the composition of Example 11 of the video supervising system of this invention. Although it is almost the same as Example 10, with the video sending set 110, the VTR control section 2201 is extended and, the VTR control section 2201, the data transmission and reception part 14, and the video signal input part 19 are connected. The control data which the operation of the VTR control section 2201 is completely the same as the video camera control section 128, and are treated only differ. Flows of control, such as recording by specification video monitor images and memory storage, recording transmission, and video-data compression, are the same as drawing 1 - 10.

[0089]VTR flows of control are almost the same as drawing 14 of Example 5. It is transmitted to the video sending set 110 with which the VTR control request was generated in the video signal output unit control request part 50 of the video receiving set 17, The video sending set 110 receives, it changes into the control data of VTR from the demand by the VTR control section 2201 instead of the video camera control section 128, and VTR2200 is controlled. In addition to the recording of Example 6, by this example 11, it connects with the video signal input device 19, and records on VTR2200. Control of other VTRs, such as a recording start

and a stop, is performed by said VTR control section 2201.

[0090]

[Effect of the Invention] In the video supervising system which comprised a bus type or a ring type channel by connecting, the video supervising system of claim 1 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, the communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, Have a video presentation control section which displays the sent video data on a video presentation control monitor, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and the video signal input part which makes input selection of the video signal of said video camera according to the Request to Send of said video receiving set, Since it had composition provided with the video signal converter which changes this input video signal into a digital video data, By having a means to be able to perform easy extension with cost reductions, such as a telecommunication cable of the system of a video supervising system, and laying work, and to choose a required video signal input by using a bus type or a ring type channel. What is necessary is to transmit only a required video data, traffic and communication cost can be reduced, and the effect that efficient communication is possible is done so.

[0091] In the video supervising system constituted by the video supervising system of claim 2 connecting a video receiving set, video transceiving equipment, and a video sending set to this order with a bus type or a ring type channel, The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data, The communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, The video presentation control section which displays the sent video data on a video presentation control monitor, Equip said video transceiving equipment with the synthetic demand part required as compounding a desired video data, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and the video signal input part which makes input selection of the video signal of said video camera according to the Request to Send of said video receiving set, The 3rd data transmission and reception part in which said video transceiving equipment transmits and receives bidirectional data and that is equipped with the video signal converter which changes this input video signal

into a digital video data, The video synthesis section which compounds the video data transmitted from said video sending set, and makes a video data a layered structure, Since it had composition provided with the video composition selecting part which makes a selection judgment of the video data demanded in the synthetic demand part of said video receiving set among the video datas transmitted from said video sending set, Since-izing can be carried out [ layered structure ] by reducing the video reception times of a video receiving set, and compounding a video data by giving a video-data synchronizer to video transceiving equipment, when displaying much videos, the effect that a video data's own management becomes easy is done so.

[0092]In the video supervising system which comprised a bus type or a ring type channel by connecting, the video supervising system of claim 3 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, the communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, The video presentation control section which displays the sent video data on a video presentation control monitor, Have a video expanding part which elongates said video data which received by said 1st data transmission and reception part, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and the video signal input part which makes input selection of the video signal of said video camera according to the Request to Send of said video receiving set, Since it had composition provided with the video signal converter which changes this input video signal into a digital video data, and the video compression zone which has a video-data compression means which compresses the data volume of this digital video data, By having a video compression zone and a video expanding part, the communication load of a bus type or a ring type channel does so the effect that time to be reduced and transmit a video data to a video receiving set from a video sending set is shortened.

[0093]In the video supervising system constituted by the video supervising system of claim 4 connecting a video receiving set, video transceiving equipment, and a video sending set to this order with a bus type or a ring type channel, The 1st data transmission and reception part in which said video receiving set transmits and receives bidirectional data, The communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, The video presentation control section which displays the sent video data on a video

presentation control monitor, The synthetic demand part required as compounding a desired video data of said video transceiving equipment, Have the 1st video expanding part that elongates said video data which received by said 1st data transmission and reception part, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, the video signal input part which makes input selection of the video signal of said video camera according to the Request to Send of said video receiving set, and the video signal converter which changes this input video signal into a digital video data, Have the 1st video compression zone that has the 1st video-data compression means that compresses the data volume of said video data, and said video transceiving equipment, The 3rd data transmission and reception part that transmits and receives bidirectional data, and the video synthesis section which compounds the video data transmitted from said video sending set, and makes a video data a layered structure, The video composition selecting part which makes a selection judgment of the video data demanded in the synthetic demand part of said video receiving set among the video datas transmitted from said video sending set, The 2nd video expanding part that elongates the video data which received by said 3rd data transmission and reception part, Since it had composition provided with the 2nd video compression zone that has the 2nd video-data compression means that compresses the data volume of the video data compounded by said video synthesis section, Even when carrying out the composite display of two or more video images, by having a video compression zone and a video expanding part. the communication load of a bus type or a ring type channel does so the effect that the time which is reduced, and is alike between a video sending set, between video transceiving equipment and video transceiving equipment, and a video receiving set, and video-data communication takes is shortened.

[0094]In the video supervising system according to any one of claims 1 to 4, the video supervising system of claim 5 the 2nd data transmission and reception part or 3rd data transmission and reception part, Since it had composition which equipped the inside with the amount checking means of data transmission which investigates the transmitting load of a bus type or a ring type channel, by having a means to investigate the amount of data transmission of a channel, a compression ratio and a frame rate can be set as a suitable value, and the effect that efficient communication is attained is done so.

[0095]In the video supervising system according to any one of claims 3 to 5, the video supervising system of claim 6 a video receiving set, It has compression ratio specification of the video data transmitted to the inside of a control request part to a specific video sending set or video transceiving equipment, or a maximum pressure shrinking percentage specification request means, The 1st video compression zone or the 2nd video compression zone, A compression ratio is determined as the compression ratio within the limits of the compression ratio to the compression ratio demand sent from said video receiving set with the amount load

of data transmission which is a result of determination or the amount checking means of data transmission about a compression ratio within the limits of setting out or its compression ratio, and said demanded compression ratio, Since it had composition which equipped the video-data compression means with a video compression ratio determination means to direct a compression ratio, The effect of being made to the amount of video datas which is in tolerance level, and could specify the clearness for every video frame of the video monitor images transmitted, and was suitable for the amount load of data transmission of the bus type or the ring type channel by having a means to change the compression ratio of a video data dynamically is done so.

[0096]In the video supervising system according to any one of claims 3 to 6, the video supervising system of claim 7 the 1st video compression zone or the 2nd video compression zone, . Determine a frame rate or the amount load of data transmission which is a result of the amount checking means of data transmission determines said frame rate. Or a frame rate determination means by which the compression ratio determined by the video compression ratio determination means and the amount load of data transmission which is the results of the amount checking means of data transmission determine said frame rate, Since it had composition provided with the inter-frame handle stage which performs inter-frame length processing corresponding to said frame rate, By performing inter-frame length processing, when carrying out video-data compression with the specified compression ratio, data reduction beyond it can be performed further and the effect that efficient communication is attained is done so.

[0097]In the video supervising system which comprised a bus type or a ring type channel by connecting, the video supervising system of claim 8 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, the communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, The video presentation control section which displays the sent video data on a video presentation control monitor, Have a video signal output unit control request part which performs the control request of the function of video signal output units, such as a video camera, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and the video signal input part which makes input selection of the video signal of said video camera according to the Request to Send of said video receiving set, Since it had composition provided with the video signal converter which changes this input video signal into a digital video data, and the video camera control section which controls the function of a video camera, By having a means to digitize a video



data, a video sending set and video transceiving equipment, The effect that transmission and reception become possible by the same cable, and the cost reduction of a telecommunication cable and cost reductions, such as laying work, can do control data and video datas, such as a video receiving set and a video camera, is done so.

[0098]In the video supervising system which comprised a bus type or a ring type channel by connecting, the video supervising system of claim 9 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, the communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, The video presentation control section which displays the sent video data on a video presentation control monitor, Have a recording Request-to-Send part required as transmitting the already recorded video data, and said video sending set, The 2nd data transmission and reception part that transmits and receives bidirectional data, and the video signal input part which makes input selection of the video signal of said video camera according to the Request to Send of said video receiving set, The video signal converter which changes this input video signal into a digital video data, the memory storage which records a video data, and a video data Recording directions and memory site directions of said memory storage, Since it had composition provided with the recording directions part which has a recording directing means in which monitor images also including the transmitted picture at the time of specific monitor-images transmission carry out backup recording directions, and the recording transmission instruction part it is directed that transmit the already recorded video data, Since the means which records, without applying load to a channel, and carries out the Request to Send of the recorded data to a video receiving set by having formed the video recording means in the video sending set was formed, Without becoming the hindrance of preferential transmission of the specific monitor-images communication in an emergency etc., being able to display the recording of a desired video camera, when free, and recording with a video sending set records other monitor images, and it does so the effect that it can back up as surveillance business.

[0099]In the video supervising system according to any one of claims 1 to 9, the video supervising system of claim 10 the video presentation control section of a video receiving set, Since it had composition provided with the memory storage saved after receiving the data which recorded the video data which received or was recorded with the video sending set, The effect of reducing the load of a channel is done so, without being able to perform fine operation of recording displays, such as playback, top delivery, rewinding, and a rapid traverse, at high speed, and making it resend by having formed the video recording means in the video

receiving set, once it receives recorded data.

[0100]In the video supervising system according to claim 9, the video supervising system of claim 11 the control request part of a video receiving set, Have a picture-recording-times change-request means to require picture-recording-times change from a video sending set, and the recording directions part of a video sending set, Since it had composition provided with the recording region change indicating means it is directed that secures the storage area of the size for picture recording times to memory storage, By the ability of the storage capacity of the recording region of each camera to be changed dynamically, the picture recording times of a surveillance camera important in an instant can be lengthened, and what has low importance is made short, and the effect that efficient use of memory storage is possible is done so.

[0101]In the video supervising system according to claim 9 or 11, the video supervising system of claim 12 a video sending set or a video receiving set, Have the memory storage which secures one field in memory storage to one video camera, and has a spare recording region apart from it, and or the recording directions part of a video sending set, Record two or more video camera data, and recording regions other than one specific video datas of it are reduced to the permission minimum, Since it had composition provided with specified recording region expansion / reduction directing means to which the recording region of said one specific video data is expanded to the allowable maximum storage capacity of said memory storage, Since it has one recording region to one camera, two or more cameras can record simultaneously and with a specified recording region expansion function. Recording region expansion of the specific camera in an emergency and reduction of other recording regions are possible, Or by having a spare recording region in the memory storage of each video sending set in addition to the recording region of each camera, at a certain time, when carrying out the repeat display of the recording of a certain video camera, it can display without suspending the recording mostly, and the effect that little confirmation work etc. can be performed easily is done so.

[0102]In the video supervising system which comprised a bus type or a ring type channel by connecting, the video supervising system of claim 13 a video receiving set and a video sending set said video receiving set, The 1st data transmission and reception part that transmits and receives bidirectional data, the communication address of all the video sending sets to which the video camera is connected, and the video camera mapping table which has the information about said video cameras, such as arrangement, The control request part which carries out the Request to Send of the desired video data to said specific video sending set with reference to this video camera mapping table, The video presentation control section which displays the sent video data on a video presentation control monitor, It is required that the information about video cameras, such as arrangement etc. of the video camera connected to each video sending set, and the video camera mapping information which comprises the communication address of the video sending set should be transmitted to said all the video sending sets, Have

video camera mapping / initialization request part which requires initialization of all the devices except said video receiving set, and said video sending set according to the 2nd data transmission and reception part that transmits and receives bidirectional data, and the Request to Send of said video receiving set, The video signal input part which makes input selection of the video signal of said video camera, Since it had composition which it had with the video signal converter which changes this input video signal into a digital video data, and the video camera mapping information part holding said video camera mapping information, By having a collecting means of initialization automation and video camera mapping information, Even if initialization of the whole video supervising system accompanying extension of a video camera, a video sending set, and video transceiving equipment is easy and two or more video receiving sets are connected with the bus type or the ring type channel into this system, It can have the same video camera mapping table with each of that video receiving set, either can also perform automatic initialization of all the systems, and the effect that the consistency of the whole system can be kept easy is done so.

---

[Translation done.]

\* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

---

## DESCRIPTION OF DRAWINGS

---

[Brief Description of the Drawings]

[Drawing 1] It is a figure showing the system configuration of Example 1 of the video supervising system of this invention.

[Drawing 2] It is a figure showing the system configuration of Example 2 of the video supervising system of this invention.

[Drawing 3] It is a figure showing the system configuration of Examples 3 and 8 of the video supervising system of this invention.

[Drawing 4] It is a figure showing the system configuration of Example 4 of the video supervising system of this invention.

[Drawing 5] It is a figure showing the system configuration of Example 5 of the video supervising system of this invention.

[Drawing 6] It is a figure showing the system configuration of Examples 6 and 11 of the video supervising system of this invention.

[Drawing 7] It is a figure showing the system configuration of Example 7 of the video supervising system of this invention.

[Drawing 8] It is a figure showing the composition of the data transmission part of Example 8 of the video supervising system of this invention.

[Drawing 9] It is a figure showing the composition of the video compression zone of Example 8 of the video supervising system of this invention.

[Drawing 10] It is a figure showing the composition of the control request part of Examples 8 and 9 of the video supervising system of this invention.

[Drawing 11] It is a figure showing the composition of the recording directions part of Example 9 of the video supervising system of this invention.

[Drawing 12] It is a figure showing the specification video monitor-images display flow of Examples 1, 2, 3, 4, 5, 7, 8, 9, 10, and 11 of the video supervising system of this invention.

[Drawing 13] It is a figure showing the multiple image composite display flow of Examples 2 and 4 of the video supervising system of this invention.

[Drawing 14] It is a figure showing the remote-control flow of the video camera of Examples 5, 10, and 11 of the video supervising system of this invention.

[Drawing 15] It is a figure showing the recording flow of Examples 6 and 11 of the video supervising system of this invention, and a specification video monitor-images display flow.

[Drawing 16] It is a figure showing the recording transmitting flow of Examples 6 and 11 of the video supervising system of this invention, and a specification video monitor-images display flow.

[Drawing 17] It is a figure showing video camera mapping table generation / initialization flow of Example 7 of the video supervising system of this invention.

[Drawing 18] It is a figure showing the video compression flow of Example 8 of the video supervising system of this invention.

[Drawing 19] It is a figure showing the picture-recording-times change flow of Example 9 of the video supervising system of this invention.

[Drawing 20] It is a figure showing the specified recording region expansion flow of Example 9 of the video supervising system of this invention.

[Drawing 21] It is a figure showing the system configuration of Example 10 of the video supervising system of this invention.

[Drawing 22] It is a figure showing the system configuration of Example 11 of the video supervising system of this invention.

[Drawing 23] It is a system configuration figure of the conventional video supervising system.

[Description of Notations]

10 A video monitor screen and 11 A video control screen, 12 video-presentation control monitor, 13 A video presentation control section, 14 data transmission and reception parts, and 15 Video camera mapping table, 16 A control request part and 17 A video receiving set, 18 video-signal converter, 19 A video signal input part, a 110 video sending set, and 111 Video camera, 112 A bus type or a ring type channel, and 20 A synthetic demand part and 21 Video composition selecting part, 22 A video synthesis section and 23 Video transceiving equipment and 30 Video expanding part, 31 A video compression zone, 50 video-signal output unit control request part, and 51 Video camera control section, 60 A recording Request-to-Send part and 61 A recording directions part and 62 Memory storage, 63 recording transmission instruction part, 70 Video camera mapping / initialization request part, and 71 Video camera mapping information part, 80 A data-transmission-and-reception means, the amount checking means of 81 data transmission, and 90 Video compression determination means, 91 frame-rate determination means and 92 [ A picture-recording-times change-request means and 1100 / A recording directing means and 1101 / Recording region change indicating means, ] A video-

data compression means, 93 inter-frame handle stage, and 100 A video Request-to-Send means and 101 A compression ratio request means and 102 1102 Specified recording region expansion / reduction directing means.

---

[Translation done.]

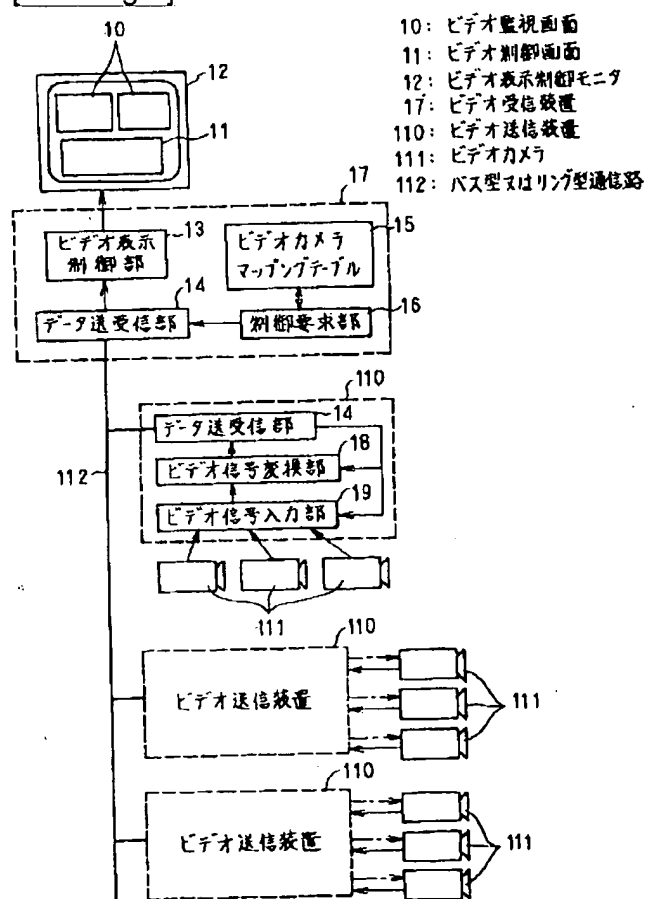
## \* NOTICES \*

JPO and INPIT are not responsible for any damages caused by the use of this translation.

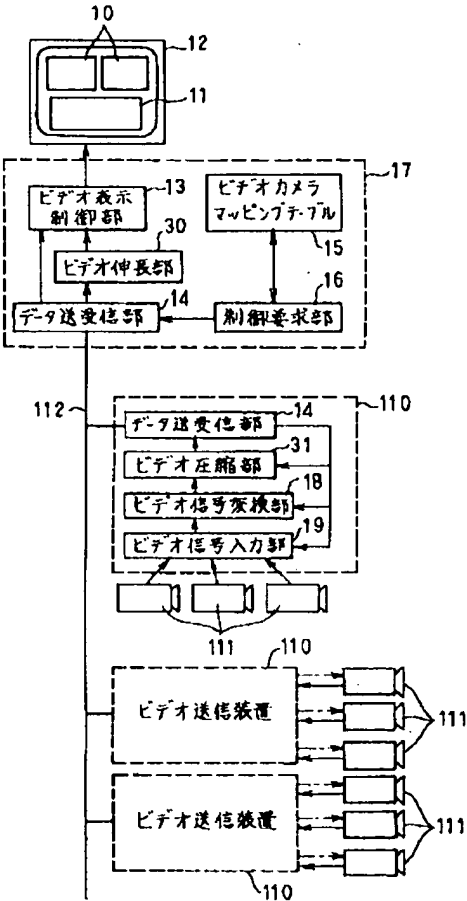
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

[Drawing 1]



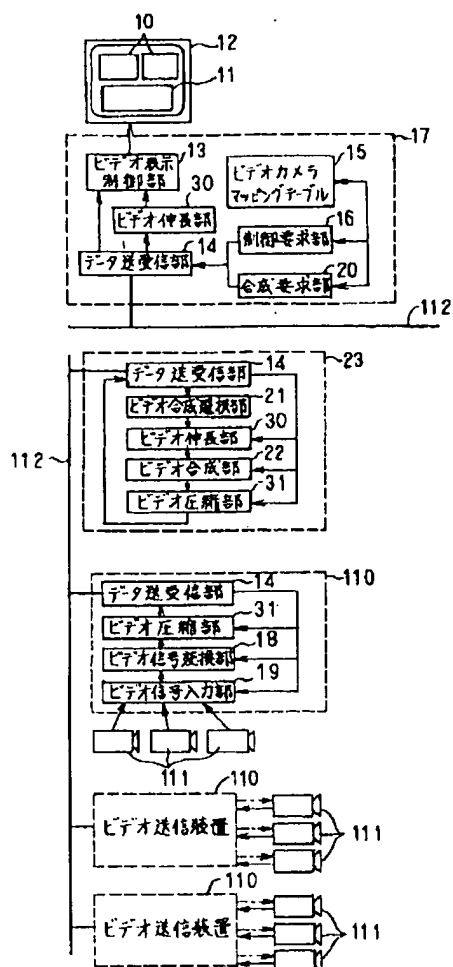
[Drawing 3]



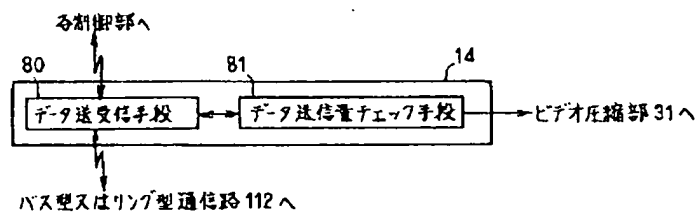
[Drawing 2]



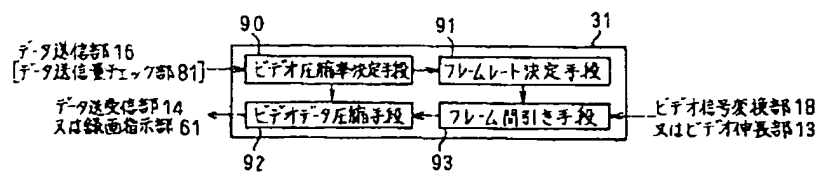




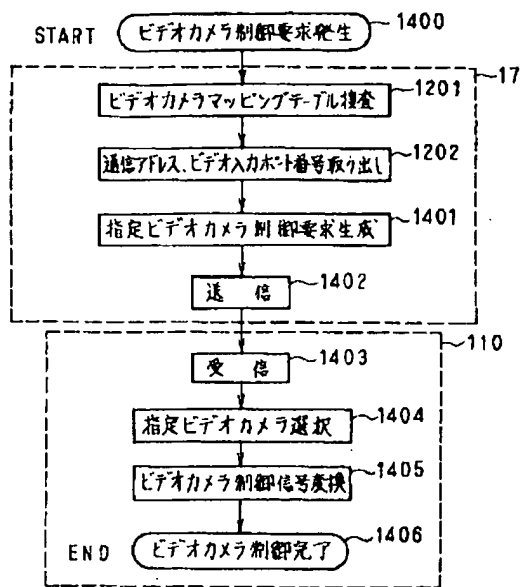
[Drawing 8]



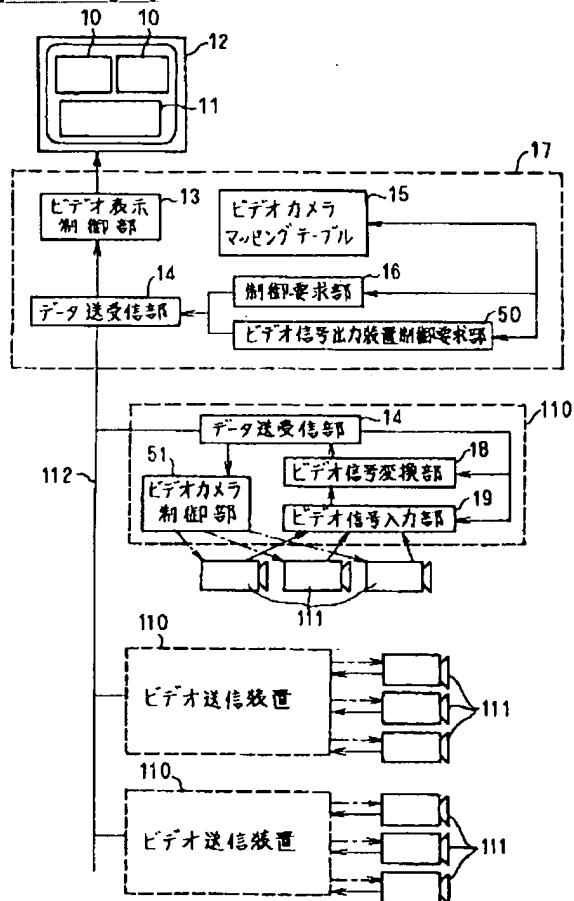
[Drawing 9]



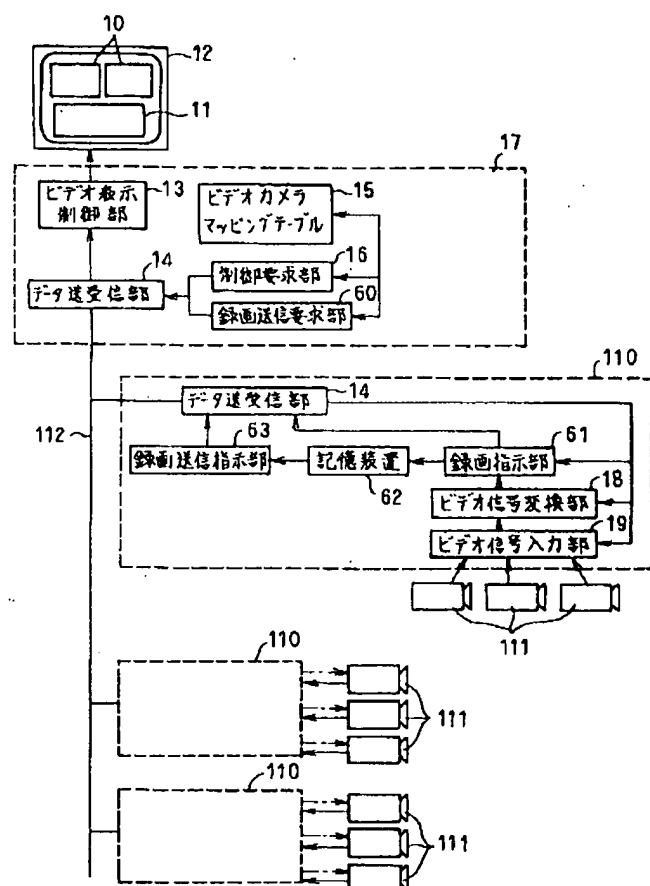
[Drawing 14]



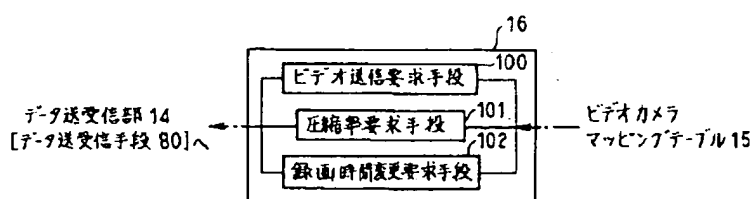
[Drawing 5]



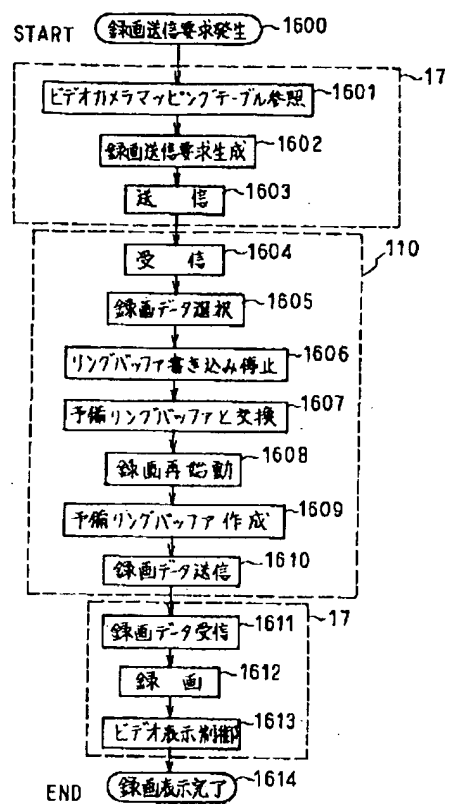
[Drawing 6]



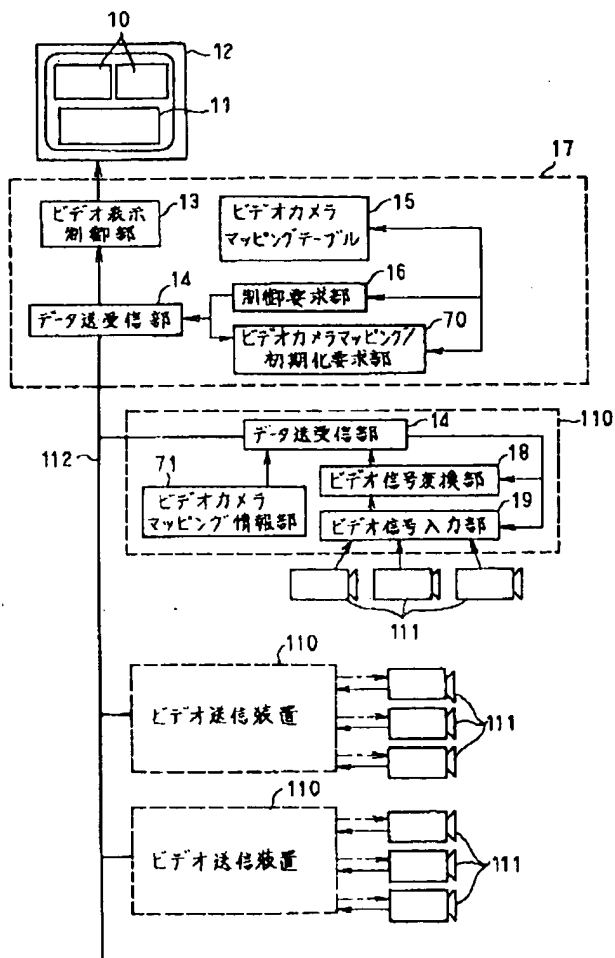
[Drawing 10]



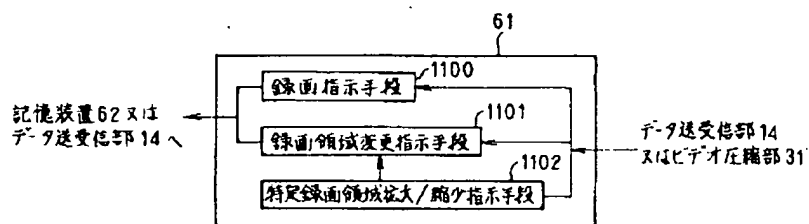
[Drawing 16]



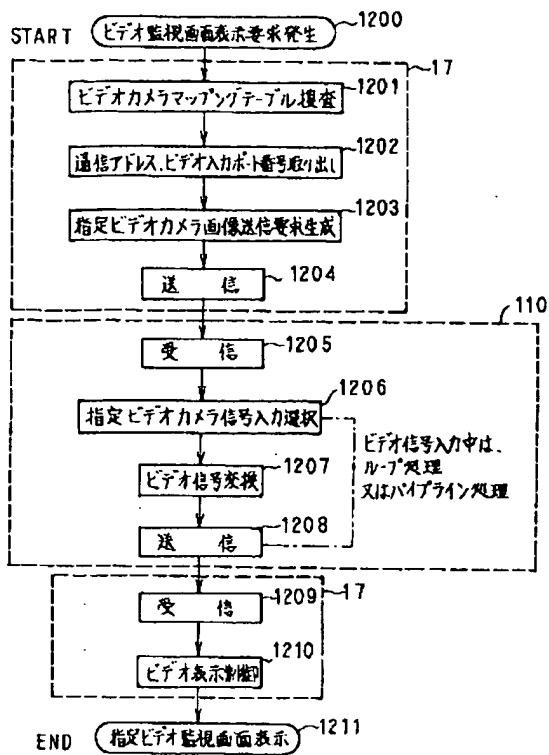
[Drawing 7]



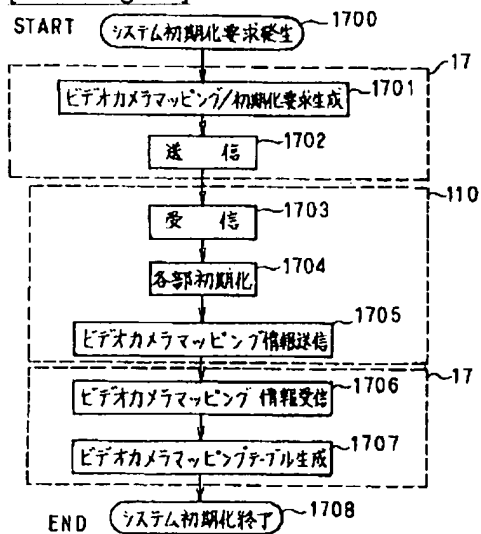
[Drawing 11]



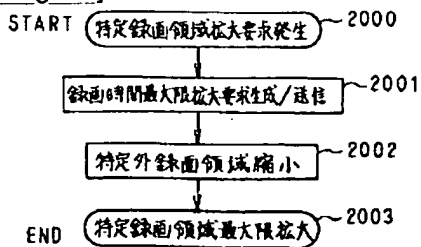
[Drawing 12]



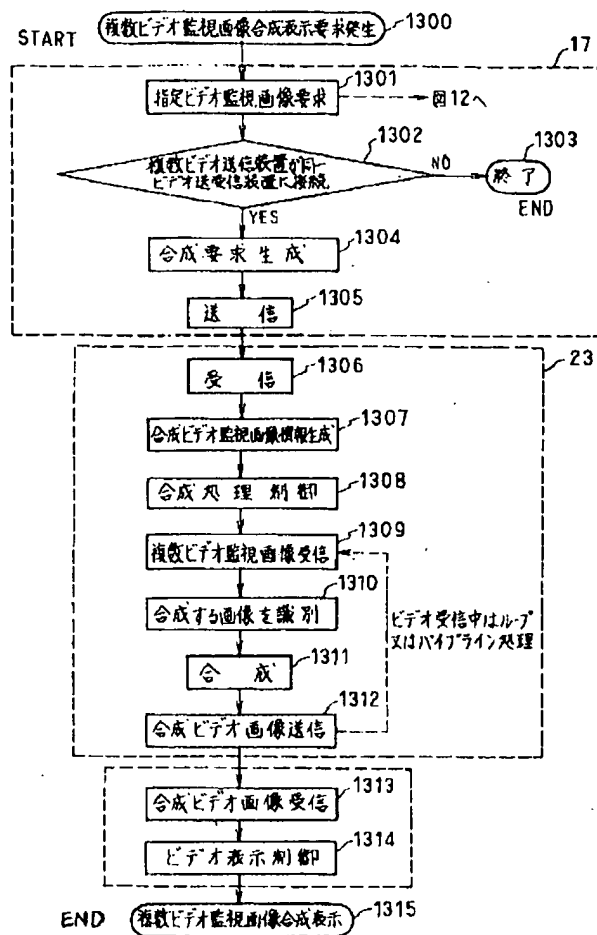
[Drawing 17]



[Drawing 20]

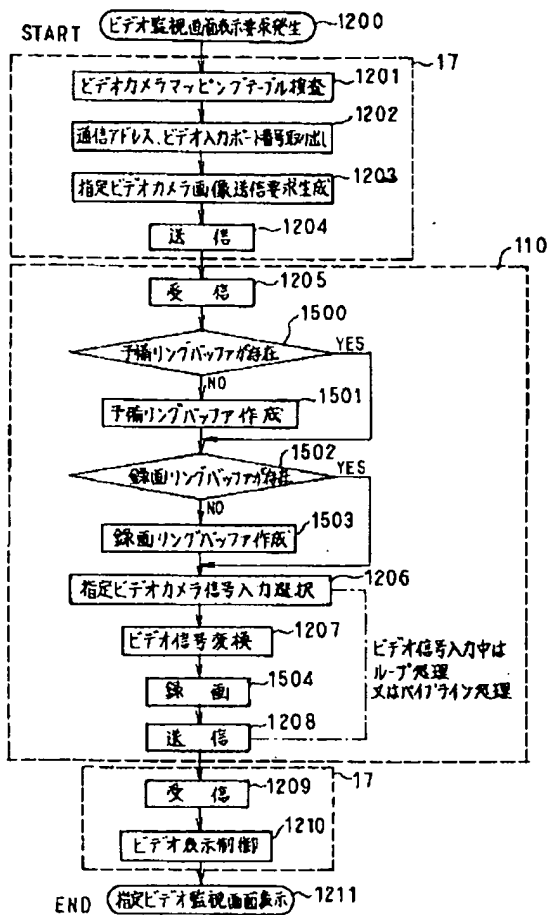


[Drawing 13]

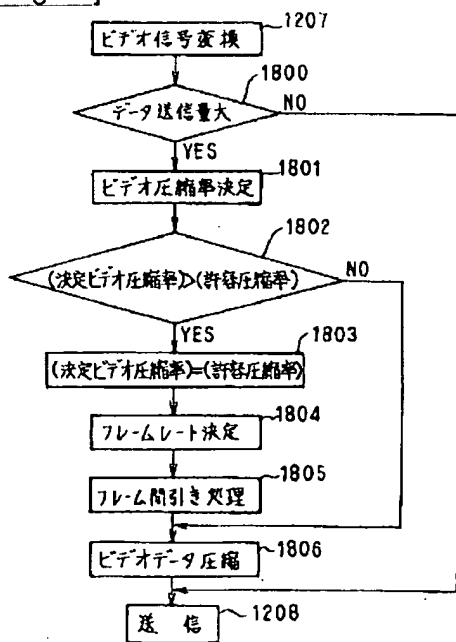


[Drawing 15]

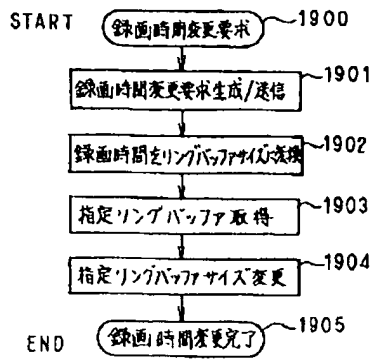




[Drawing 18]



[Drawing 19]



[Drawing 21]



